



June 13, 2010

Skyline Innovations  
Mike Healy  
2451 18th Street, NW  
Second Floor  
Washington, DC 22201  
202.306.7900

[mhealy@skylineinnovations.com](mailto:mhealy@skylineinnovations.com)

**RE: PROTEST TO "ADVICE LETTER TO COMMISSION"- CSI - THERMAL PROGRAM**

CPUC  
Attn: Maria Salinas, Honesto Gatchalian  
Energy Division Attention: Tariff Unit  
505 Van Ness Avenue  
San Francisco, CA 94102

Dear Ms. Salinas and Mr. Gatchalian,

Thank you for the opportunity to provide feedback on the proposed California Solar Initiative – Thermal Program Handbook. After careful review, we have identified the following issues with the proposed handbook.

**A) Under section 6.3.2, concerning system sizing for multi-family/commercial projects:**

We have used the suggested methods mentioned in this section, however we have found that measuring the run time of water heaters using data loggers provides the most accurate measurement of hot water energy consumption without the high cost of ultrasonic metering. By comparing our preliminary estimates based upon water heater run time to actual hot water consumption from flow meters after system installation, we have found our estimates achieve accuracy of around +/- 10% of total consumption. We can also determine time of usage using this methodology, which is essential for adequately sizing system storage.

**B) Under section 6.4.1, concerning minimum metering equipment requirements**

Overall, we recommend simply requiring EN 1434/OIML R75 compliance for the thermal metering equipment used in the Energy Measurement System, as opposed to specifying the accuracy of individual sub assemblies, since some of the specification differ from these established international standards. EN 1434/OIML R75 already specify accuracy for subcomponents above and beyond the requirements in the proposed California Solar Initiative – Thermal Program Handbook, including aspects of thermal metering like response time. Specifying EN 1434 compliance and subcomponent accuracy will increase the cost of compliance, as Energy Measurement System providers will have to double-certify their equipment.

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Harmonized international standards for thermal metering equipment currently exist. These standards include OIML R-75.1, available at: <http://www.oiml.org/publications/R/R075-1-e02.pdf>, and EN 1434, available at: <http://webstore.ansi.org/RecordDetail.aspx?sku=SS-EN+1434-1>

These standards are harmonized, so equipment meeting OIML R-75 will also meet EN 1434.

Since these are the established standards for thermal metering, products available off the shelf today from United States suppliers are built to comply with these standards. This presents a problem, as the proposed California Solar Initiative –Thermal Program Handbook has differing requirements for thermal metering. This means the products available today will not comply with the proposed California Solar Initiative –Thermal Program Handbook requirements, and new thermal metering products will need to be developed. This will delay the timeframe for implementation of the California Solar Initiative, as well as raise the cost of compliance as the products will be unique to the California market and therefore produced in a smaller volume than thermal meters certified to the international OIML R-75 and EN 1434 standards.

The differing requirements between the proposed California Solar Initiative –Thermal Program Handbook requirements and the OIML R-75 and EN 1434 standards include the following:

**C) Under section 6.4.1.1 Flow Meter:**

“Full bore style flow meters... shall be individually wet-calibrated and accurate to within  $\pm 0.4\%$  of reading”

**D) Under the OIML R75 and EN 1434 standards, different categories of flow meters can meet different levels of accuracy.** Specifically, Class 1 flow meters must exhibit a maximum permissible error of  $\pm 3.5\%$  of reading, and less accurate Class 2 and 3 flow meters must exhibit a maximum permissible error of  $\pm 5\%$  of reading. Since these are the established international standards for flow meters used in thermal metering, this is the general accuracy of affordable flow meters used in existing, off the shelf thermal meters available today. The higher  $\pm 0.4\%$  requirement will be difficult to comply with.

Additionally flow meters available today with  $\pm 0.4\%$  accuracy across the flow range specified may be prohibitively expensive.

**E) Under section 6.4.1.2 Temperature Sensors:**



The proposed requirements specify semiconductor based temperature sensors. The existing standards for thermal metering, OIML R75 and EN 1434, do not specify a particular temperature sensor technology, only accuracy requirements. As a result, most existing thermal meters use matched pair platinum RTD temperature sensors, due to the low drift exhibited by these temperature sensors over time. This will decrease the likelihood of existing thermal metering equipment meeting the proposed requirements of the California Solar Initiative. Additionally, semiconductor based temperature sensors exhibit significantly more drift than platinum RTD temperature sensors, reducing measurement accuracy over time. Finally, the existing standards for thermal metering specify a looser accuracy requirement than the proposed California Solar Initiative requirements, so existing products may not comply with the proposed requirements.

Again, I very much appreciate the opportunity to provide my concerns and feedback as the CSI-Thermal Program prepares for launch. As a solar thermal project developer, Skyline Innovations is very familiar with metering technologies available and the costs associated with such technologies. We currently have OIML R-75 and/or EN 1434 metering technology on all of our commercial thermal systems in operation throughout the mid-atlantic region and are happy to provide more information on our experience with these technologies.

Please feel free to contact me anytime if you would like to discuss these concerns in more detail.

Best Regards,

Mike Healy  
Skyline Innovations

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Through Green Energy

FAX: 213-244-4957	DATE: 6/14/2010
PHONE:	PAGES: 4 (including cover)
RE: CSI-Thermal	CC:

program protest  
COMMENTS:

Protest/comments for CSI-Thermal  
program "advice letter to commission."  
Feel free to call me if you have any questions

Cheers, Mike

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Mike Healy

Skyline Innovations

2451 18th Street

Second Floor

Washington, DC 20009

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[www.skylineinnovations.com](http://www.skylineinnovations.com)